Taxonomic notes on some insular Loriculus hanging-parrots

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Loriculus (amabilis) sclateri

Collar (1997) treated the taxon commonly known as Moluccan Hanging-parrot Loriculus amabilis—which in Dickinson (2003) has three subspecies (amabilis from Halmahera and Bacan, sclateri from Sula, and ruber from Peleng and Banggai)—as two monotypic species, Moluccan Hanging-parrot L. amabilis and Sula Hanging-parrot L. sclateri; and in this he was followed by Clements (2000). However, Coates & Bishop (1997) and Juniper & Parr (1998) maintained these taxa as one species (albeit both with comments that perhaps a split is in order) and continued to recognise the subspecies ruber, as did Dickinson (2003), who declined to accept the split owing to a lack of detailed evidence.

Collar (1997) separated *L. sclateri* from *L. amabilis*—both described by Wallace (1862, 1863) within a few months of each other, but with no suggestion of a mutual taxonomic proximity—on the following grounds: *sclateri* is very considerably larger (14 cm in length vs. 11 cm), with no red on the head but a large orange patch, often with a large red centre, on the lower mantle and rump, and the sexes are similar (whereas they differ in *amabilis*). He missed the further points that the uppertail-coverts in the diminutive *amabilis* extend to or beyond the tail (if this is not an artefact of preparation technique), and are considerably brighter red. All these differences, best appreciated by reference to Figs. 1–2, are quite as strong as those that distinguish species such as Yellow-throated Hanging-parrot *L. pusillus* from Flores Hanging-parrot *L. flosculus* and Sri Lankan Hanging-parrot *L. beryllinus* from Vernal Hanging-parrot *L. vernalis*, all of which are widely accepted, including by Dickinson (2003).

The size difference is particularly notable; no other polytypic *Loriculus* shows any significant mensural variation between subspecies, and certainly nothing approaching this scale. Measurements given by Forshaw (1989) are sufficient to demonstrate the remarkable morphometric disjunction. Table 1 reveals that nominate *sclateri* is approximately 32% larger on bill size, 19% on tarsus- and taillength, and 23% on wing-length, and Figs. 1–2 indicate how these differences must translate into a very substantial difference in mass (*sclateri* may well be twice the weight of *amabilis*), not the most propitious of circumstances for the transfer of gametes.

The Sula Islands have strong zoogeographical affinities with Sulawesi (van Bemmel 1948, White & Bruce 1986). Stattersfield *et al.* (1998), who did not follow Collar (1997) over *L. sclateri*, identified 16 restricted-range bird species in the Banggai and Sula Islands Endemic Bird Area (EBA), eight of which occur in other

TABLE 1

Means and ranges of measurements of specimens of *Loriculus* (a.) amabilis, L. (a.) sclateri and L. (a.) ruber in Forshaw (1989). Sample sizes: amabilis nine males, three females; sclateri 11 males, five females; ruber two males, two females, with five unsexed ruber yielding: bill, mean 11.2 (range 11–12); tarsus, mean 12.0 (11–13); wing, mean 93.4 (88–99); and tail, mean 36.2 (33–39).

	bill ♂	bill ♀	tarsus ♂	tarsus ♀	wing ♂	wing ♀	tail ♂	tail ♀
amabilis	9.2	9.0	10.2	10.3	77.2	75.7	31.3	32.0
	9–10	9.0	9–11	10-11	74–84	71-80	30-33	31–33
sclateri	12.1	12.0	12.1	12.4	93.9	93.6	37.4	38.0
	11-13	11-13	11-13	12-13	89-102	88-106	35-41	36-40
ruber	12.0	11.0	12.5	13.0	87.0	90.0	36.0	38.5
	12.0	11.0	12–13	13.0	86–88	89–91	34–38	38–39

EBAs: of these eight, six occur in the Sulawesi EBA, one in the Banda Sea, Buru, Seram and North Maluku EBAs, and only one (*L. amabilis sensu lato*) in the North Maluku EBA (where birds are known from Halmahera and Bacan). The distribution of *L. amabilis sensu lato* (Moluccas, Sula, Peleng and Banggai) is therefore anomalous, and tends to reinforce the clear morphological evidence that *L. sclateri* is far better split from *L. amabilis* specifically.

To be conclusive, however, this judgement requires a clarification of the status first of the taxon *ruber* and then, because of their potential intermediacy, of the neglected insular forms of Sulawesi Hanging-parrot *L. stigmatus*.

Loriculus sclateri ruber

Under the entry for *L. sclateri*, Collar (1997) dropped *ruber* (Peleng and Banggai Islands) as a valid subspecies, pointing out that it was based on a character present in at least some *L. amabilis* (*sic*, in error for *L. sclateri*), and was probably an agerelated character. However, this was mistaken. The original description (Meyer & Wiglesworth 1896) reports that *ruber* is very like *sclateri*, 'sed pallio scarlatino et fronte perspicue rubra' ('but mantle scarlet and forehead clear red'), continuing with more detail in German (my translation):

Very near *sclateri*, but distinguished fairly easily by its much redder mantle. In *sclateri* this is orange with red in the middle, in *ruber* red with narrow orange edging, which virtually disappears at the sides. Our specimens of *sclateri* vary rather widely in the extent of the red; Herr Büttikofer has kindly sent us the one with the most extensive red in a series of 25 in Leiden, but it does not approach our specimens from Peleng and Banggai, and the red of this bird is deeper, not so orange-tinged. After we sent him a specimen of the new form, Herr Büttikofer reported: "The mantle shows substantially more red than the majority of our specimens, but you will see that the red on one of our Sula birds (the specimen he sent us) is hardly any less pronounced." Herr Büttikofer also sent us a specimen from Sula with rather extensive brown-red on the forehead, but it does not match the



Figure 1. Dorsal view of the type-specimens of (above) *Loriculus sclateri* (BMNH 73.5.12.1549) and (below) *L. amabilis* (BMNH 73.5.12.1557) in the Natural History Museum, Tring, UK (N. J. Collar © Natural History Museum)



Figure 2. Lateral view of specimens in Fig. 1a; the bill of L. amabilis is slightly damaged (N. J. Collar \mathbb{O} Natural History Museum)



Figure 3. Two (upper pair) *Loriculus sclateri sclateri* (BMNH 73.5.12.1549, 1561) and two (lower pair) *L. s. ruber* (BMNH 96.4.16.6–7) (N. J. Collar © Natural History Museum)



Figure 4. A specimen (above) of *Loriculus stigmatus stigmatus* (MZB 13717) and the type (below) of *L. s. croconotus* (MZB 13728) (Mohammad Irham © Museum of Zoology, Bogor)



Figure 5. Type of (above) *Loriculus stigmatus quadricolor* (BMNH 1889.1.20.291) and an example of (below) *L. s. stigmatus* (BMNH 57.8.3.5) (N. J. Collar © Natural History Museum)



Figure 6. Type of (above) *Loriculus tener* (BMNH 1889.1.20.272) and one (below) *L. aurantiifrons meeki* (BMNH 89.1.20.294) (N. J. Collar © Natural History Museum)

Peleng and Banggai specimens, in which this is much more pronounced. Herr Büttikofer noted in this regard: "The same applies to the red-brown forehead, which in almost all our specimens from Sula does not show any red-brown. However, one of the specimens I send you for comparison shows that this dirty red is not entirely absent from Sula birds" . . . Apart from these two main character differences, the red of the rump in *ruber* is rather brighter and prettier, more comparable to the mantle coloration, whilst in *sclateri* this red is darker than the back.

In the Natural History Museum (NHM), Tring, UK, there are two specimens of ruber and 12 sclateri, and a glance at them reveals that the mantle of several sclateri are quite as red, and indeed stronger red, than the two ruber. It was on this basis that Collar (1997), relying on the truncated diagnosis in Forshaw (1989) ('similar to sclateri but with scarlet on mantle'), declined to recognise ruber. However, a closer examination of the two NHM ruber and reference to the original description above indicate that the pattern of the red on the mantle of ruber is different: where in sclateri the red is enclosed above and below by a rather broad triangular orange border, in ruber the upper orange border is very narrow and, as Meyer & Wiglesworth (1896) observed, virtually absent at the sides (Fig. 3). Meyer & Wiglesworth (1896) also observed, as a minor character, that the uppertail-coverts of ruber are brighter than in sclateri, and concolorous with the mantle; this character is apparent in the NHM material. (M. LeCroy, in refereeing this paper and checking text against ten sclateri and five ruber in the American Museum of Natural History [AMNH], points out that most sclateri show no red on the back, only a bold mustard-orange, but confirms that those that do show the enclosed-triangle pattern. She also judges that the throat patch in *ruber* is more circular, less elongated, than in *sclateri*, and confirms the former's brighter uppertail-coverts.)

Rather more puzzling is the diagnostic reference to a clear red forehead. This is not apparent in the NHM material; but both specimens have a dirty reddish-brown forehead (as do the birds in AMNH: M. LeCroy *in litt.* 2006), which can also be seen, albeit nothing like so clear-cut, in four of the NHM *sclateri*. Meyer & Wiglesworth (1896) referred to a specimen in Leiden of *sclateri* with a brownish-red forehead, albeit still not as pronounced as on *ruber*, but nowhere in their German text do they repeat their Latin diagnosis that *ruber* has a clear red forehead. Rather, it would appear from their comparison with *sclateri* that the forehead of *ruber* is dull reddish brown.

Forshaw (1989) carries measurements of *ruber* which suggest no appreciable difference in size from *sclateri* (see Table 1, including legend for unsexed birds); thus *ruber*, which is in any case to the west of *sclateri*, cannot be considered a morphometric stepping-stone between north-eastern *amabilis* and central-placed *sclateri*. It is also apparent—and this too is important for the unimpeded resurrection of specific status for *sclateri*—that the forehead coloration of *ruber* in no way allies it with the red-crowned *amabilis*. Thus *Loriculus sclateri* moves much closer to confirmation as a valid species, with *ruber* a valid subspecies, differentiated from *sclateri* by its more consistently red and less yellow-edged

mantle, paler red rump and uppertail-coverts, and more consistently and clearly brownish-red forehead.

This then leaves two neglected subspecies of *Loriculus stigmatus* to be revisited and revived, and the implications for the position of *sclateri* to be assessed.

Loriculus stigmatus croconotus Loriculus stigmatus quadricolor

When discussing *L. stigmatus* White & Bruce (1986) remarked: 'Jany's (1955a: 220) *croconotus* (TL [=type-locality] Muna [Island]) must be considered a synonym, since Voous & van Bemmel (1951) were unable to distinguish birds of Muna and Butung [Buton] from those of Sulawesi, and the same applies to Walden's (1872: 398) *quadricolor* (TL Togian) based on the same characters as are attributed to *croconotus*.' Both taxa thereafter sank into synonymy. Although both were treated by Forshaw (1978) they were dropped by Forshaw (1989), who was followed by Collar (1997), Juniper & Parr (1998) and Clements (2000), whilst Dickinson (2003) provided a footnote on the merging of *croconotus* but made no reference to *quadricolor*:

Several remarks are required here, the first merely being that the correct short citation is to van Bemmel & Voous (1951), not vice versa. Next: these authors were writing *before* the description of *croconotus*, and simply reported: 'There is no difference between birds from Buton and Muna and a series from Celebes in our collection.' It is not clear from this how carefully the material was inspected, and it surely cannot be appropriate to synonymise a subspecies on the basis of an examination that took place four years before it was established. We cannot be certain that van Bemmel & Voous (1951) noticed or considered the characters used by Jany (1955)—paler green wings and tail, and (my translation) 'strong eggyolk-yellow colour to the upper back (not a washed/faint greenish yellow as in *stigmatus*).' Jany (1955) noted that birds from south-east Sulawesi belong to nominate *stigmatus* and show no approach to *croconotus*, which he considered a well-marked subspecies.

NHM lacks any specimens of *Loriculus* from Buton and Muna, but a photograph of a specimen of nominate *stigmatus* and the type of *croconotus* in the Museum of Zoology in Bogor, Indonesia, shows the yellow coloration of the back of the latter which partly diagnoses it, and possibly its paler green wings (Fig. 4). Moreover, in April 2006 I was able to find a single specimen from Muna in the RMNH collection (otherwise containing 21 skins of Sulawesi *stigmatus*), and this (RMNH Cat.45) shows both diagnostic characters of Jany's (1955) *croconotus*. Further examination of material is clearly in order, but at present *croconotus* should be permitted to stand.

White & Bruce's (1986) comment about *quadricolor* is their own, not based on anything written by van Bemmel & Voous (1951), and suggests that they regarded it as having been established on the same characters as *croconotus*. This is mistaken. Walden (1872) distinguished *quadricolor* 'from *stigmatus* by the golden back, by

the chin and throat-spot being much smaller, and the red of the uropygium not being quite so dark.'

In NHM there are three specimens of *quadricolor* and 19 *stigmatus*. Examination of this material shows very clearly that *quadricolor* has a distinct golden-yellow mantle and back, whereas mainland Sulawesi birds have only a very indistinct trend towards yellow in this area (Fig. 5) and *croconotus* is plainer yellow. The red throat patch is indeed reduced in all three *quadricolor* by comparison with most *stigmatus*, although a few specimens of the latter show equally small or even smaller patches (possibly an age character). However, the rumps of *quadricolor* are indeed a shade brighter than those of *stigmatus*. On this basis, although the sample size is very small, *quadricolor* must be allowed to stand as a valid taxon.

Measurements in Forshaw (1978) indicated no significant differences between quadricolor and stigmatus, but the reinstatement of this subspecies contributes to the gathering evidence that the Togian Islands have rather more zoogeographical and conservation importance than they have been heretofore allowed. Discussing endemism on these islands, White & Bruce (1986) referred to Ixos affinis aureus—Togian Golden Bulbul Thapsinillas affinis aurea in Dickinson (2003), Togian Northern Golden Bulbul T. longirostris aurea in Fishpool & Tobias (2005)—and 'four additional subspecies [which] are invalid or not well differentiated,' but until recently the only exploration of the islands was by A. B. Meyer as long ago as 1871 and J. J. Menden for a few days in 1938. With the discovery of Togian Hawk-owl Ninox burhani (Indrawan & Somadikarta 2004) the islands have taken on new interest, and further work there may produce new taxa.

What emerges rather more interestingly is that there is a tendency in eastern insular forms of *stigmatus* to yellow and golden-yellow on the back, continuing stepwise eastwards with the red-centred yellow backs of *L. sclateri ruber* and *L. sclateri sclateri*. Moreover, NHM's single male *quadricolor* (the holotype) shows flecks of green in the red crown, whilst *L. sclateri ruber* shows the residuum of a brownish-red forehead, so that a progressive loss of the red crown on birds from mainland Sulawesi east to Sula is also suggested; and *quadricolor*'s brighter rump is midway towards that of *ruber* and *sclateri*. Undoubtedly *L. sclateri* must now be allied with *L. stigmatus* rather than *L. amabilis*, reaffirming the biogeographic link between Sulawesi and Sula. Even so, *sclateri*'s strong red mantle set in yellow, and lack of a bright red crown, coupled with its slightly brighter rump, continues to indicate species status; it doubtless forms a superspecies with *stigmatus*. We thus arrive at the following arrangement.

Loriculus stigmatus Sulawesi Hanging-Parrot

—L. s. stigmatus (S. Müller, 1843)

—L. s. croconotus Jany, 1955

—L. s. quadricolor Walden, 1872 Loriculus sclateri Sul A Hanging-parrot

—L. s. ruber Meyer & Wiglesworth, 1896

—L. s. sclateri Wallace, 1863

Sulawesi Muna & Buton Is Togian Is

Peleng & Banggai Is Sula Is Loriculus amabilis Wallace, 1862 MOLUCCAN HANGING-PARROT Halmahera, Bacan

Loriculus (aurantiifrons) tener

Sibley & Monroe (1990) split the form *tener* (Green-fronted Hanging-parrot) of the Bismarck Archipelago from mainland New Guinea *aurantiifrons* with the remark: 'May be conspecific with *aurantiifrons*, but the distinctness of this isolate suggests treatment as an allospecies.' In this they were followed by Collar (1997), Juniper & Parr (1998), Stattersfield *et al.* (1998) and Clements (2000). However, Dickinson (2003) retained the two taxa as one species, with the note: 'Collar (1997) treated *tener* as a separate species (it lacks the orange front).'

The information about the missing orange front is of course correct, but the context in which it is given seems to suggest that this is the only difference between the taxa, and that it is insufficient to engender confidence in the new arrangement. However, Collar's (1997) description of *tener* is framed in terms of several other differences from *aurantiifrons*, and reads (with the corresponding colour he gives for *aurantiifrons* interpolated in square brackets): 'forehead green [golden-yellow], throat patch orange-red [red], rump and uppertail-coverts yellow [red]; underside of tail pale blue [no colour given; by implication green]' (see Fig. 6). The orange or golden-yellow forehead in *aurantiifrons* is present in the male only; its lack in *tener* means that the sexes appear generally similar in *tener*, rather obviously different in *aurantiifrons* (though females of both taxa have an aquamarine wash on the face which distinguishes them from males: M. LeCroy *in litt.* 2006).

In NHM material it is evident that the difference in undertail colour is between pale blue in *tener* (type only available) and darkish grey-blue in *aurantiifrons*; this does not seem to be a dependable character for diagnosis, as confirmed by M. LeCroy (*in litt.* 2006), who considers the undertail colour in the larger AMNH sample variable and hard to discriminate. The difference in breast-spot colour is definite, but not a strong feature. By contrast, the differences in forehead colour and rump colour between males of the two taxa are very considerable, producing two very distinct taxa. Again, one may observe that the differences are quite as strong as those that distinguish accepted species such as *L. pusillus* from *L. flosculus* or *L. beryllinus* from *L. vernalis*, and it is wholly reasonable to treat *tener* specifically. The Bismarck Archipelago is, of course, characterised by a high degree of avian endemism, and *L. tener* is one of 35 bird species restricted to New Britain and/or New Ireland and/or their satellite islands (Stattersfield *et al.* 1998).

Evaluations against a quantitative scoring system

A referee, P. Andrew, proposes that these taxa be evaluated using the quantitative system for evaluating the distinctiveness of allopatric taxa outlined recently by Collar (2006a,b). In this system, a major character (pronounced difference in colour or pattern of a body part) scores 3, a medium character (clear difference, reflected more by shade or extent than by colour or presence/absence) 2, a minor character

(weak difference in shade or extent) 1, a threshold of 7 is set to allow species status, and no taxon can qualify for this status on minor characters alone. In Collar (2006a) I only allowed morphometric differences to count as minor characters, for reasons of complexity of material and inadequately developed criteria, but here I regard this restraint as unnecessary.

Loriculus sclateri, as constituted here, differs from L. amabilis in its size (score 3), colour of mantle (2), lack of red forecrown (3), and darker (1) and questionably shorter (1) rump and uppertail-coverts, total 9–10. Loriculus sclateri ruber differs from L. stigmatus quadricolor (these forms showing the closest approach to each other in the two species) in its much bolder coloured mantle (3), lack of red forecrown (3) and brighter rump (1), total 7. Loriculus sclateri ruber differs from the nominate by pattern and shade of mantle (1), brownish-red forecrown (1), shape of throat patch (1) and shade of rump (1), total 4. Loriculus stigmatus croconotus differs from the nominate by its yellow mantle (1) and brighter green wings (1), total 2, and from L. s. quadricolor by its weaker coloured mantle (1) and rump (1), possibly also brighter green wings (1), total 2–3. The latter taxon differs from the nominate by its golden-orange mantle (2), questionably smaller throat patch (1) and brighter rump (1), total 3–4. Loriculus tener, as constituted here, differs from L. aurantiifrons by its green forehead (3), orange-red throat patch (1), yellow rump and uppertail-coverts (3), total 7.

I should perhaps comment that this system, which I describe as 'simplistic, crude and arbitrary' but at least bringing a degree of consistency and transparency to a necessarily subjective process (Collar 2006a), was developed to serve as an aid in unresolved or newly proposed cases, as here. Inevitably, however, it may be invoked retrospectively, as it were, to highlight taxa whose status as species is more a matter of tradition and assumption (an example might be *Loriculus flosculus* in relation to *L. pusillus*), but it should be noted that the full criteria are still being pieced together (Collar *et al.* in prep.).

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Proposed synonymy of *Sylvia cantillans moltonii* Orlando, 1937, with *Sylvia cantillans subalpina* Temminck, 1820

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Sylvia subalpina Temminck, 1820, was considered valid in place of Sylvia cantillans Pallas, 1764, for a very long time, amongst no less than eight alternative species names (cf. Salvadori 1872, Seebohm 1881, Orlando 1939). After Sherborn (1905) had reprinted Pallas's (1764) early work, cantillans steadily replaced subalpina. Temminck's name subalpina was based on an unpublished description